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Original Article

Treatment Expectations for CAM Interventions in Pediatric Chronic Pain Patients and their Parents

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Patient expectations regarding complementary and alternative medicine (CAM) interventions have important implications for treatment adherence, attrition and clinical outcome. Little is known, however, about parent and child treatment expectations regarding CAM approaches for pediatric chronic pain problems. The present study examined ratings of the expected benefits of CAM (i.e. hypnosis, massage, acupuncture, yoga and relaxation) and conventional medicine (i.e. medications, surgery) interventions in 45 children (32 girls; mean age = 13.8 years \pm 2.5) and parents (39 mothers) presenting for treatment at a specialty clinic for chronic pediatric pain. Among children, medications and relaxation were expected to be significantly more helpful than the remaining approaches ($P < 0.01$). However, children expected the three lowest rated interventions, acupuncture, surgery and hypnosis, to be of equal benefit. Results among parents were similar to those found in children but there were fewer significant differences between ratings of the various interventions. Only surgery was expected by parents to be significantly less helpful than the other approaches ($P < 0.01$). When parent and child perceptions were compared, parents expected hypnosis, acupuncture and yoga, to be more beneficial than did children, whereas children expected surgery to be more helpful than did parents ($P < 0.01$). Overall, children expected the benefits of CAM to be fairly low with parents' expectations only somewhat more positive. The current findings suggest that educational efforts directed at enhancing treatment expectations regarding CAM, particularly among children with chronic pain, are warranted.

Keywords: Pain – expectation – child – parent – alternative therapies

Introduction

The role of patient expectations regarding complementary and alternative medicine (CAM) interventions has received increased attention of late (1–3). As noted in a recent review, an understanding of patient expectations is particularly relevant to non-Western therapies since many are grounded in theoretical approaches that may be unfamiliar to patients and

may involve lifestyle changes that may be incompatible with patients seeking 'a quick fix'. Parents are typically responsible for their children's medical care, and thus, parental expectations are likely to influence decisions to seek CAM treatment for their children. For example, the conventional view that children are averse to needles likely impacts parent's decisions to seek acupuncture treatment, as well as pediatricians' decisions regarding recommendations to try acupuncture (4). Once the decision to seek CAM has been made, parent's expectations may impact adherence and attrition rates. Earlier work has shown that parents with less accurate expectations about child psychotherapy were more likely to prematurely terminate their children's treatment (5). Similar findings have

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been reported in parents who prematurely terminated cancer treatment for their children (6).

Clinicians and researchers have long debated the potential link between patient expectations and treatment outcome. Kaptchuk (2) maintained that CAM modalities may involve a high level of 'performative efficacy' (7), which relies on the power of belief, meaning, expectation and persuasion. As discussed by Cho *et al.* (8), expectation theory (9) asserts that patients' expectancies and beliefs regarding a positive outcome trigger a placebo response (i.e. therapeutic effects that are not due to pharmacodynamic or specific properties of treatment) (10). A comprehensive review of 85 studies concluded that expectancies appeared to be a mechanism by which placebos exert their effects across a range of clinical conditions and outcomes (11). It should be noted, however, that CAM interventions were specifically excluded from this review. Another review which used more stringent criteria for inclusion found that in 15 of 16 studies providing moderate-quality evidence, positive expectations were related to better health outcomes (12). It is not stated whether CAM approaches were specifically excluded from this latter review.

Chronic pain was among the most commonly studied conditions in the latter review and effect sizes for expectancies ranged from small (13) to large (14) depending on the outcome measure. Expectations regarding treatment for chronic pain may be especially salient due to the multidimensional nature of pain, which encompasses biological, psychological and social aspects (15). Not only is the clinical status of chronic pain syndromes largely defined on the basis of subjective self-reports, symptoms fluctuate based on selective attention and affective state—factors cited as enhancing the role of patient expectations in treatment outcome (8). Of note, a recent randomized trial of adult patients with low back pain treated with acupuncture or massage found that neither general optimism for improvement of pain nor average expectation for treatment benefits across the two interventions predicted outcome (16). Instead, patients who expected to receive greater benefit from acupuncture than from massage were more likely to evidence better outcome with acupuncture than with massage, and vice versa. The authors thus emphasized the importance of assessing patients' expectations regarding *specific* CAM treatments.

No published research, however, has examined parent and child expectations regarding specific CAM treatments for their children within the same study. Therefore, the purpose of the present study was to examine treatment expectations regarding the perceived potential benefit of specific CAM approaches (i.e. hypnosis, massage, acupuncture, yoga and relaxation) in children presenting to a pediatric chronic pain clinic and their parents. The expected benefit of each CAM modality was compared within the child and parent groups as well as between parents and children. Parent and child ratings of the expected helpfulness of the CAM interventions were also compared with two conventional medical treatments (i.e. taking medicine and surgery). In addition, we examined whether parent or child ratings of expected treatment benefit differed

depending on the number of doctors previously consulted for the child's pain.

Methods

Participants

There were 45 children (32 girls, 71%) with a mean age of 13.8 years (SD = 2.5, range = 9–18 years) and 45 parents (39 mothers, 87%). Children were patients presenting for treatment at a multidisciplinary, tertiary clinic specializing in pediatric chronic pain. Presenting symptoms included the following (note that percentages sum to more than 100% due to multiple pain complaints): 53.3% abdominal pain, 48.9% headaches, 22.2% back pain, 22.2% body pain, 20% arm/leg pain, 11.1% chest pain and 15.6% other pain. Ethnic composition of sample was as follows: 77.8% White, 15.6% Hispanic, 2.2% African-American and 2.2% Others. Highest level of parent education was as follows: less than 8th grade, 2.2%; some high school, 2.2%; high school diploma, 4.4%; some college or associates degree, 31.1%; college degree, 24.4%; and post-graduate degree, 35.6%. IRB-approved written informed consent forms were completed by parents and children provided written assent (see below for detailed description).

The data for this study were drawn from a larger sample of pediatric pain patients and their parents ($n = 104$). Questions regarding CAM interventions were included after data collection had begun, and thus the current study analyzed data for the 45 parent–child pairs with complete data on all CAM questions.

Procedure

Before the initial clinic intake interview, two baseline questionnaire packets, one for the child and one for a parent to complete, were mailed to the patient's home. The primary purpose of the questionnaires was for clinical assessment; the completed questionnaires became part of the patients' medical records. The following IRB-approved procedures were used to obtain informed consent for the questionnaire responses to be used for research purposes. All patients' initial clinic appointments were scheduled over the telephone. At this time, parents with children in the eligible age range (10–17 years) were asked if they would be interested in participating in a larger study which involved in-home interviews. If they responded affirmatively, they subsequently received a phone call from a research assistant who verified their interest in participating. Informed consent/assent forms were then mailed to potential participants for their review. The families were then phoned a second time and details of the in-home interview study and the provisions of the consent/assent forms were reviewed with parents and children. Verbal consent was obtained from both parents and children at this time. On the day of the in-home interviews, the consent and assent forms were reviewed in person with parents and children, and written consent/assent was obtained.

For parents who declined to participate in the larger in-home interview study or who had children who were not in the eligible age range for the larger study, a research assistant approached these families after their initial clinic appointment and asked if they were willing to have their questionnaire data abstracted anonymously and analyzed for research purposes. If families responded affirmatively, they were given IRB-approved consent forms for review and signature. If consent was not given, the questionnaires remained in the medical records and were not included in the study.

The questionnaire packets contained instructions that parents and children were to complete the measures separately without consulting each other. The questionnaires covered demographic and general health information about the child and a number of measures to assess the child's pain, anxiety and functioning levels. The families were instructed to bring the questionnaires with them to the initial clinic interview. During the interview, the clinicians reviewed the responses and asked the families to clarify responses that were not clear. Only those measures that were relevant to the study aims are discussed herein.

Measures

Treatment Expectations

Treatment expectations were assessed using individual items based on previously developed items for children with asthma and their parents (19), clinical experience with pediatric chronic pain patients and the pediatric chronic pain literature. As part of a larger study, children and parents were asked at the time of the initial evaluation to rate how much they thought each of 15 potential treatments would help symptoms, including active and passive treatment approaches that spanned conventional medical interventions, psychological treatments and CAM approaches. The current study focused only on child and parent expectations regarding the following five CAM approaches and two conventional treatments: hypnosis, relaxation, massage, acupuncture, yoga, taking medicine and having surgery. All items were close-ended with a response scale from 1 to 5. The response options were as follows: Completely, A lot, Some, A little, Not at all. Responses were scaled such that lower scores indicated that the intervention was expected to be less helpful and higher scores indicated that the intervention was expected to be more helpful. Thus, on the 1–5 scale: 1 = not at all (helpful), 2 = a little, 3 = some, 4 = a lot, 5 = completely (helpful). Items were pilot tested to ensure face validity. Adequate reliability (i.e. internal consistency) was found for the seven items in children (Cronbach's $\alpha = 0.68$) and parents (Cronbach's $\alpha = 0.66$).

Demographics and Pain Severity

Locally developed questionnaires, completed by parents, assessed children's age, sex, race/ethnicity, type of pain complaints and previous health care utilization, including the number of doctors previously consulted for the child's pain, as well

as parents' education level and marital status. In addition, both parents and children were asked to rate the child's usual level of pain using a 0–10 visual analog scale (VAS). The VAS consisted of a horizontal line anchored with the descriptors as follows: 0 = no pain and 10 = unendurable pain.

Results

Statistical Analysis

Inspection of the distributions as well as results of Kolmogorov–Smirnov tests revealed non-normal distributions; transformations failed to sufficiently normalize the data. Given that most parametric tests require normal distributions and in light of the relatively small sample size, non-parametric tests were used to analyze the data. To examine sex differences in responses between boys and girls, as well as between parents of boys and girls, a series of Mann–Whitney *U*-tests were conducted. To examine the extent to which relationships between parent and child ratings generalized across the various interventions, bivariate correlations between parent and child responses were examined by calculating Spearman's rho. Responses to the individual items were compared separately within each group (i.e. in parents and in children) using Friedman's Rank test (the non-parametric equivalent of a one-sample repeated measures test). Differences in responses between parents and children were examined using Wilcoxon Matched-Pairs Signed-Ranks tests. To protect against inflation of Type I error, a probability level of 0.01 was used.

Descriptive Statistics

Means and standard deviations for expectation ratings for children and parents are presented in Tables 1 and 2, respectively. As shown in the tables, children expected medications would

Table 1. Means (SD) for child ratings of expected benefit in the total sample and in boys and girls

	Total sample (<i>n</i> = 45)	Girls (<i>n</i> = 32)	Boys (<i>n</i> = 13)
CAM interventions			
Child—relaxation	2.9 (1.2)	2.8 (1.3)	3.1 (1.2)
Child—massage	2.4 (1.4)	2.4 (1.3)	2.2 (1.5)
Child—yoga	1.8 (1.1)	2.0 (1.1)	1.5 (0.9)
Child—acupuncture	1.7 (1.1)	1.7 (1.0)	2.0 (1.2)
Child—hypnosis	1.4 (0.8)	1.4 (0.8)	1.5 (0.8)
Total CAM	2.1 (0.8)	2.1 (0.8)	2.0 (0.8)
Conventional interventions			
Child—meds	3.3 (1.1)	3.4 (1.2)	3.2 (0.9)
Child—surgery	1.5 (0.9)	1.4 (0.8)	1.7 (1.3)
Total conventional	2.4 (0.7)	2.4 (0.8)	2.5 (0.6)
Total child	2.2 (0.6)	2.2 (0.7)	2.2 (0.6)

Items were rated from 1 = not at all (helpful) to 5 = completely (helpful); meds = taking medications.

be the most helpful intervention whereas parents rated both relaxation and medications as the most helpful. Children expected hypnosis to be the least helpful whereas parents rated surgery as the least beneficial intervention. Table 1 also displays means and standard deviations separately for boys and girls, and Table 2 similarly shows means and standard deviations separately for parents of boys and girls. No sex differences were found in children's or parents' ratings. Thus, the remaining analyses were conducted on the sample as a whole. Because the sample was largely homogeneous on demographic characteristics (i.e. mostly Caucasian and highly educated), analyses examining the potential impact of race/ethnicity and socioeconomic status were not conducted. Overall, neither parent nor child expectation ratings was correlated with child age, nor was child age correlated with parent or child ratings of children's usual pain. Thus, age was not included as a covariate in the analyses. Parent (Mean = 6.2; SD = 1.6) and child (Mean = 6.1; SD = 2.0) ratings of the child's usual pain were similar and highly correlated (Spearman's $\rho = 0.69$, $P < 0.001$).

Correlations between parent and child expected helpfulness ratings are shown in Table 3. Parent and child ratings for

the following interventions were significantly correlated: relaxation, acupuncture, medications and surgery ($P < 0.01$). Parent and child ratings for hypnosis, massage and yoga were not significantly correlated.

Table 4 displays the number of doctors consulted by participants for the child's pain before presenting at the clinic. Data on the number of doctors previously consulted was missing for one patient. As is evident from the table, most participants had consulted multiple doctors. Examination of the distribution revealed that most patients reportedly consulted six or fewer doctors ($n = 28$; 63.6%) whereas a minority had consulted more than six doctors ($n = 16$; 36.4%). Thus, ratings were compared between these two groups in both parents and children.

Children's Treatment Expectations

As shown in Table 1, children's combined ratings of the expected benefit of the two conventional medical approaches was higher than the combined rating of the five CAM approaches. However, these differences did not reach statistical significance. Analyses of individual ratings indicated that taking medications and relaxation were rated by children to be the most helpful approaches and both were rated significantly higher than the remaining interventions ($P < 0.01$). Massage, expected to be the third most helpful intervention was considered similar to yoga, the fourth rated intervention, but superior to the remaining treatments ($P < 0.01$): i.e. acupuncture, rated fifth; surgery, rated sixth; and hypnosis, rated seventh. Yoga (fourth) was expected to be similar to acupuncture (fifth) but was rated significantly more helpful than surgery and hypnosis ($P < 0.01$). Ratings for the three lowest rated interventions, acupuncture, surgery and hypnosis were not statistically different.

Parent's Treatment Expectations

The total parent expectations for the CAM interventions were higher than the total rating for conventional medicine (Table 2), but these differences were not statistically significant. Analyses of parent's individual ratings revealed that relaxation, the highest rated intervention was expected to be more helpful than hypnosis (rated fifth), acupuncture (rated sixth) and surgery (rated seventh) ($P < 0.01$), but did

Table 2. Means (SD) for parent ratings of expected benefit in the total sample and in parents of boys and girls

	Total sample (<i>n</i> = 45)	Girls (<i>n</i> = 32)	Boys (<i>n</i> = 13)
CAM interventions			
Parent—relaxation	3.2 (1.1)	3.2 (1.2)	3.5 (0.8)
Parent—massage	2.8 (1.2)	2.8 (1.2)	2.9 (1.4)
Parent—yoga	2.7 (1.1)	2.7 (1.1)	2.6 (1.3)
Parent—hypnosis	2.5 (1.3)	2.5 (1.3)	2.5 (1.4)
Parent—acupuncture	2.4 (1.2)	2.3 (1.1)	2.8 (1.4)
Total CAM	2.7 (0.9)	2.7 (0.9)	2.8 (0.8)
Conventional interventions			
Parent—meds	3.2 (1.1)	3.0 (1.1)	3.6 (1.0)
Parent—surgery	1.4 (0.8)	1.3 (0.7)	1.5 (1.1)
Total conventional	2.3 (0.7)	2.2 (0.7)	2.5 (0.6)
Total parent	2.6 (0.7)	2.5 (0.7)	2.8 (0.5)

Items were rated from 1 = not at all (helpful) to 5 = completely (helpful); meds = taking medicine.

Table 3. Bivariate correlations (Spearman's ρ) between parent and child ratings of expected benefit in the total sample

	Child— hypnosis	Child— relaxation	Child— acupuncture	Child— massage	Child— yoga	Child— meds	Child— surgery
Parent—hypnosis	0.31	0.16	0.23	0.02	0.19	−0.03	−0.05
Parent—relaxation	0.18	0.43*	0.28	0.15	0.19	0.15	−0.18
Parent—acupuncture	0.21	0.33	0.40*	0.30	0.20	0.07	−0.09
Parent—massage	0.17	0.22	0.12	0.33	0.31	0.05	−0.34
Parent—yoga	0.06	0.21	0.02	0.03	0.21	−0.04	−0.23
Parent—meds	−0.06	0.06	0.10	0.01	0.03	0.41*	−0.01
Parent—surgery	−0.09	0.02	0.04	0.08	−0.02	−0.18	0.55*

* $P < 0.01$.

Table 4. Number of doctors previously consulted by participants for the child's pain

Number of doctors	Frequency (total $n = 44$)	Percentage of sample
1	2	4.3
2	1	2.3
3	6	13.6
4	6	13.6
5	7	15.9
6	6	13.6
7	6	13.6
8	1	2.3
9	1	2.3
11–15	5	11.4
16–20	2	4.5
20+	1	2.3

Data on the number of doctors previously consulted was missing for one participant.

not differ from the other interventions. Taking medication, the second highest rated intervention was considered superior to acupuncture and surgery ($P < 0.01$), but did not differ from the other interventions. Massage, yoga, hypnosis and acupuncture were rated similarly and all were expected to be significantly more helpful than surgery ($P < 0.01$). Thus, having surgery was rated the least helpful and significantly less than all other modalities ($P < 0.01$).

Parent–Child Differences in Expectations

A comparison of total CAM ratings between parents and children found that parents expected CAM interventions to be more beneficial than did children ($P < 0.01$). However, parents and children did not differ in their ratings of conventional medicine. Overall, parent total ratings (i.e. combined ratings for CAM and conventional medicine) were significantly higher than children's ($P < 0.01$). When these expectations were examined individually, parents and children differed significantly in their ratings of hypnosis, acupuncture, yoga and surgery. Parents and children did not differ in their expectations of the helpfulness of relaxation, massage or taking medication. For all interventions except for surgery, parents expected the intervention to be more helpful than did children. Compared with the ratings of parents, children expected surgery to be more helpful.

Perceived Expectations and Previous Physician Consultation

Children's ratings of expected helpfulness did not differ among those who reported visiting six or fewer doctors compared with those who reported consulting seven or more doctors. For parents, only one significant difference emerged. Parents who had consulted fewer doctors rated relaxation as

being more helpful than parents who had consulted a greater number of doctors ($P < 0.01$).

Discussion

In this sample of pediatric chronic pain patients presenting to a specialty clinic, we found significant differences in the expected benefits of CAM and conventional medical approaches for a variety of pain problems among parents and children. Specifically, parents rated hypnosis, acupuncture and yoga as being potentially more helpful than did children. In contrast, children expected surgery to be more beneficial than did their parents. It is perhaps not surprising that parents considered this most invasive conventional medical approach to be less desirable than children who may not have grasped the full implications of having surgery. Overall, parents rated the CAM approaches as likely to be more helpful than did their children. Despite these differences, both parents and children expected medications and relaxation to be the most helpful interventions. Parents however, expected relaxation and medication to be of similar benefit as massage and yoga; medication was also expected to be similar to hypnosis. On the other hand, parents expected surgery to be significantly less beneficial than all other interventions, whereas among children ratings for surgery did not differ statistically from the other two lowest ranked interventions, acupuncture and hypnosis. Of interest, the relatively low expected benefit of acupuncture in both parents and children is consistent with the conventional view that children have an aversion to needles (4). Also noteworthy is the finding that children expected hypnosis to be among the least helpful interventions despite several studies showing beneficial results for trials of hypnosis for pediatric pain [for a review see Tsao *et al.* (18)]. Although parents rated hypnosis more positively than did children, it was still ranked among the three lowest interventions and was considered superior only to surgery.

Our results provide support for the importance of assessing expectations for specific CAM treatments, as recommended by Kalauokalani *et al.* (16). Although we found significant correlations between parent and child expectations for some of the CAM interventions examined (i.e. relaxation, acupuncture), there was no relationship between parent–child ratings for others—specifically, hypnosis, massage and yoga. Moreover, parent–child ratings *across* the various CAM approaches were not correlated suggesting that these relationships did not generalize to other forms of CAM. One possible explanation for our findings is that children were less knowledgeable about certain CAM interventions than their parents and therefore expected them to be less helpful. Similarly, parents and children may have differed in terms of previous experience with some CAM treatments. Familiar or previously encountered CAM interventions might have been more likely to have been discussed between parents and children. Similarly, the high correlation between parents' and children's expectations of the two medical interventions, surgery and medications, is likely related to the joint familiarity with these

conventional approaches (Table 4). Unfortunately, we did not assess knowledge or previous experience with CAM in this study and future work should examine the impact of experience on expectancies. Nevertheless, in light of the observed differences in expectations regarding the various CAM interventions, our findings point to the need to assess specific treatment expectancies rather than general optimism regarding CAM treatments.

Nearly all of the patients in our sample had previously consulted multiple doctors for the child's pain complaints (Table 4). However, the number of doctors previously consulted did not appear to impact children's treatment expectancies. Only parents who had consulted six or fewer doctors expected relaxation to be more helpful compared with parents who had consulted seven or more doctors. One possible explanation for this finding is that parents who continue to see more and more doctors for their child might be less likely to accept the role of stress in their child's pain and thus be less likely to view relaxation as a helpful treatment strategy. Parents might expect less from *any* treatment over time as they see more doctors without relief; however, this did not seem to be the case across the board. Most importantly, in this group of parents and children with chronic pain seeking treatment at a tertiary pediatric pain treatment clinic, the expected benefits of both CAM and conventional treatments was fairly low, particularly in children. Averaged combined ratings for the CAM and conventional approaches in children were equivalent and both corresponded to roughly a '2' on our 5-point scale, i.e. 'a little (helpful)'. While parents were a little more optimistic in the potential benefits of CAM compared with conventional treatment, their overall expectancy ratings were similarly low (less than '3' on the 5-point scale or of 'some help').

In our previous work (19), we found that parents of pediatric chronic pain patients who had previous experience with acupuncture expected that a combined acupuncture and hypnosis package would be less effective than those without such previous experience. Parent expectations for acupuncture/hypnosis package did not differ between those who had previous experience with hypnosis and those who did not. Despite these differences, neither previous experience nor parental expectations was related to children's treatment outcome. These findings are somewhat at odds with expectation theory (9) which posits that positive expectancies are a mechanism for placebo effects. We did not, however, assess children's own expectations of the treatment package in this earlier study. Children's expectations for the treatment may have differed from their parents' expectations, as the present results would suggest, and may have emerged as significant predictors of treatment response. In addition, the level of previous experience reported by parents differed across the two interventions—29% of parents endorsed previous experience with acupuncture and 16% endorsed previous experience with hypnosis. Thus, nearly twice as many parents had previous experience with acupuncture than with hypnosis, and, as noted above, parents with previous acupuncture experience had more negative expectations for treatment, a relationship that may have contributed to the

null findings. Nevertheless, the current findings suggest that additional studies examining associations among parent and child expectancies and clinical outcome for CAM interventions are warranted.

Several caveats to our study should be mentioned. As stated above, we did not assess previous knowledge or experience with CAM and such factors may have influenced parent and child expectations. Our assessment of treatment expectations was based on a single item for each of the interventions of interest; inclusion of more detailed assessments of treatment expectancies (e.g. via interviews) would increase confidence in our findings. Although we instructed parents and children to complete their ratings without consulting each other, it is not known to what extent parents and children may have discussed their perceptions and therefore influenced the others' ratings. Our sample was largely White and also highly educated—demographics which may limit generalizability of the findings. However, the demographic characteristics of our sample were typical of specialty pediatric pain clinics. In addition, the current sample size precluded examination of the observed relationships according to children's pain complaints—an important area for future study. Finally, the focus of the current study was on expectations of future possible treatment; it is not known to what extent such expectations may have changed over time perhaps in response to provider interactions, positive treatment response or interactions between parents and children. Kemper *et al.* (4) reported that perceptions of acupuncture treatment among both parents and children tended to become more positive over the course of therapy. These findings could be due to many factors including growing satisfaction with treatment and/or an increased therapeutic bond between patients and providers. Also, in our acupuncture/hypnosis study (17) in which 30 sequential pediatric pain patients coming to pain clinic were offered entry to the study, only three children refused. Thus, while our current study suggests low expectations of effect with combined acupuncture/hypnosis, our previous study suggested that, when offered, children with chronic pain will accept such treatment. Patient expectancies may change over time with treatment, as Kemper *et al.* (4) suggests.

In sum, our findings revealed significant differences in existing expectations of the potential benefits of CAM interventions in parents and children presenting to a pediatric pain specialty clinic. Children, in particular, had low expectations about the helpfulness of CAM. It is possible that low treatment expectations on the part of children and parents may adversely affect willingness to try CAM and/or the degree of adherence to CAM treatments. Bursch *et al.* (17) found that parent belief in treatment efficacy was positively correlated with parents' ratings of their children's health and with parent and child self-efficacy, and inversely correlated with impact on the family, symptoms, emergency room use and barriers to treatment. Our findings point to the need to educate parents and children regarding CAM treatments to prevent misconceptions that may lead to potential avoidance of CAM interventions or poor adherence. Moreover, educational efforts may focus on

enhancing parent and child expectancies regarding CAM with a view to influencing clinical outcomes. In accord, Crow *et al.* (11), in their comprehensive review, recommended the following specific strategies: enhance accurate expectations about procedures and coping with their effects; enhance patients' skills for self-management and their ability to communicate with providers; and enhance patients' beliefs in the benefits of effective treatments. Previous work has indicated that parents can influence their children's expectations regarding painful procedures (20). However, Kalauokalani *et al.* (16) noted that little is known about the extent to which providers may influence patients' expectations about treatment. It may be that providers and parents working together can positively influence children's expectancies regarding CAM interventions and that improved expectations in children may lead to enhanced clinical outcomes.

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